CLAIMS

1.   A method of processing symbols for transmission in a multi-carrier multiple-input multiple-output (MIMO) communication system, comprising:

receiving at least one stream of symbols for transmission on a plurality of subbands and from a plurality of antennas;

multiplexing the at least one stream of symbols such that the symbols in each of the at least one stream are transmitted from the plurality of antennas and such that the at least one stream starts in the same subband; and

forming a stream of multiplexed symbols for each of the plurality of antennas.

2.   The method of claim 1, wherein the symbols in each of the at least one stream are transmitted diagonally across the plurality of subbands and the plurality of antennas.

3.   The method of claim 1, wherein N_T streams of symbols are multiplexed to form N_T streams of multiplexed symbols for N_T antennas, where N_T is an integer greater than one.

4.   The method of claim 1, wherein one stream of symbols is multiplexed to form N_T streams of multiplexed symbols for N_T antennas, where N_T is an integer greater than one.

5.   The method of claim 1, wherein N_D streams of symbols are multiplexed to form N_T streams of multiplexed symbols for N_T antennas, where N_T is an integer greater than one and N_D is an integer less than or equal to N_T.

6.   The method of claim 1, wherein the stream of multiplexed symbols for each antenna is transmitted at full power available for the antenna.

7.   The method of claim 1, wherein each of the at least one stream is transmitted at N_T / N_D times full power for one antenna in the plurality of antennas, where N_D is the number of streams of symbols and N_T is the number of antennas.

8.   The method of claim 1, wherein same amount of transmit power is used for each of the at least one stream of symbols.

9. The method of claim 1, wherein same total power is used for the plurality of antennas for each of the plurality of subbands.

10. The method of claim 1, wherein a variable number of streams of symbols is transmitted based on channel condition.

11. The method of claim 1, wherein each stream in the at least one stream is associated with a rate determined based at least in part on a received signal quality for the stream.

12. The method of claim 1, wherein each stream in the at least one stream is associated with a rate determined based at least in part on an order in which the at least one stream is recovered at a receiver.

13. The method of claim 1, wherein a codeword for a stream in the at least one stream wraps around the plurality of antennas.

14. A method of transmitting symbols in a multi-carrier multiple-input multiple-output (MIMO) communication system, comprising:
receiving at least one stream of symbols for transmission on a plurality of subbands and from a plurality of antennas;
multiplexing the at least one stream of symbols such that the symbols in each of the at least one stream are transmitted diagonally across the plurality of subbands and the plurality of antennas and such that the at least one stream starts in the same subband;
forming a stream of multiplexed symbols for each of the plurality of antennas; and
transmitting the stream of multiplexed symbols for each antenna at full power available for the antenna.

15. A transmitter apparatus in a multi-carrier multiple-input multiple-output (MIMO) communication system, comprising:
means for receiving at least one stream of symbols for transmission on a plurality of subbands and from a plurality of antennas;

means for multiplexing the at least one stream of symbols such that the symbols in each of the at least one stream are transmitted from the plurality of antennas and such that the at least one stream starts in the same subband; and

means for forming a stream of multiplexed symbols for each of the plurality of antennas.

16.   The transmitter apparatus of claim 15, further comprising:

means for transmitting the stream of multiplexed symbols for each antenna at full power available for the antenna.

17.   A transmitter unit in a multi-carrier multiple-input multiple-output (MIMO) communication system, comprising:

at least one symbol mapping element operative to code data to provide at least one stream of symbols for transmission on a plurality of subbands and from a plurality of antennas; and

a multiplexer operative to multiplex the at least one stream of symbols such that the symbols in each of the at least one stream are transmitted from the plurality of antennas and such that the at least one stream starts in the same subband, and to form a stream of multiplexed symbols for each of the plurality of antennas.

18.   The transmitter unit of claim 17, further comprising:

a plurality of transmitters associated with the plurality of antennas, each transmitter operative to transmit a respective stream of multiplexed symbols at full power available for an associated antenna.

19.   A method of processing symbols received in a multi-carrier multiple-input multiple-output (MIMO) communication system, comprising:

obtaining a plurality of streams of received symbols for a plurality of receive antennas, wherein each of the plurality of streams of received symbols includes symbols received on a plurality of subbands of an associated receive antenna, and wherein the plurality of streams of received symbols include at least one stream of transmitted symbols having been multiplexed such that the transmitted symbols in each of the at least one stream are sent from the plurality of transmit antennas and such that the at least one stream starts in the same subband; and

processing the plurality of streams of received symbols to recover the at least one stream of transmitted symbols.

20.   The method of claim 19, wherein the processing includes

performing equalization on the plurality of streams of received symbols to detect the at least one stream of transmitted symbols, and

recovering each detected stream of transmitted symbols.

21.   The method of claim 19, wherein the processing is based on a successive interference cancellation (SIC) technique.

22.   The method of claim 19, wherein the processing includes

performing equalization on the plurality of streams of received symbols to detect a first stream of transmitted symbols in the at least one stream,

recovering the detected stream of transmitted symbols,

estimating interference due to the recovered stream of transmitted symbols, and

canceling the estimated interference from the plurality of streams of received symbols to obtain a plurality of streams of modified symbols, and

wherein the performing and recovering are repeated on the plurality of streams of modified symbols to recover a second stream of transmitted symbols in the at least one stream.

23.   The method of claim 22, wherein the interference is estimated based on a coded interference estimation technique.

24.   The method of claim 19, further comprising:

determining a rate for each stream in the at least one stream based on an estimated received signal quality for the stream.

25.   A receiver apparatus in a multi-carrier multiple-input multiple-output (MIMO) communication system, comprising:

means for obtaining a plurality of streams of received symbols for a plurality of receive antennas, wherein each of the plurality of streams of received symbols include symbols received on a plurality of subbands of an associated receive antenna, and wherein the plurality of streams of received symbols include at least one stream of transmitted symbols having been multiplexed

such that the transmitted symbols in each of the at least one stream are sent from the plurality of transmit antennas and such that the at least one stream starts in the same subband; and

means for processing the plurality of streams of received symbols to recover the at least one stream of transmitted symbols.